

Department of Mechanical and Industrial Engineering



PROGRAM:

INDUSTRIAL ENGINEERING

# INDUSTRIAL ENGINEERING

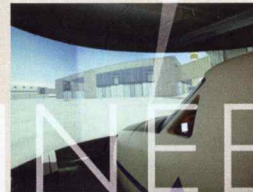
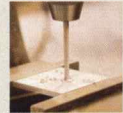
Industrial engineering concentrates on the design, development, implementation, and evaluation of integrated systems of people, knowledge, equipment, energy, and material. Industrial engineering draws upon the principles and methods of engineering analysis and synthesis, as well as mathematics, physical, and social sciences. Industrial engineers work to eliminate wastes of time, money, materials, energy, and other resources. Industrial engineers also serve as a bridge between customers and design and manufacturing engineers.

## Why Choose Industrial Engineering at Concordia?

Industrial engineering brings together a diverse base of mathematical and scientific knowledge to design, improve, and install integrated systems of people, material, information, equipment, and energy. Industrial engineers analyze operational processes and deliver performance improvements that allow the customer to receive an end product in less time, with higher quality and at a reduced cost. It is well known that "engineers make things, industrial engineers make things better!" As you can imagine, just about every organization has a system that enables it to function. Job opportunities for industrial engineers are not restricted to engineering firms. Industrial

engineering skills can be used in hospitals, banks, airlines, transportation services and retail stores. At Concordia University, industrial engineering is integrated with the mechanical engineering department allowing the students to better understand technical processes.

Students in industrial engineering at Concordia University not only benefit in learning theoretical views of production planning, engineering economics, computer integrated manufacturing, facilities design, human factors and ergonomics, simulation, operations research, statistics, stochastic and quality control. They also have the opportunity to learn how to apply the theory through internships using business strategies such as Lean Manufacturing, Six Sigma and Theory Of Constraints (TOC). Internships are provided to the students from well-known organizations like the Concordia Co-Op Program or Concordia's Institute of Aerospace Design and Innovation (CIADI) where jobs are offered in leading companies in Montreal, France, Germany, Italy, Portugal or Poland. The Industrial Engineering Program at Concordia University is the only English program offered in Quebec.



# INDUSTRIAL ENGINEERING



## Companies That Hire Concordia Industrial Engineering Graduates

Once graduated from our program, you will be ready for a career in many areas such as: ergonomist, facilities designer, manufacturing systems engineer, manufacturing or operations supervisor, operations analyst, process engineer, quality control specialist/engineer, safety engineer, space planner, supply chain manager, logistic planner, aircraft fleet and crew scheduler. Companies that hire Concordia industrial engineering graduates include:

Wyeth Pharmaceuticals  
Kraft  
Aldo Group  
Atomic Energy of Canada Limited  
Schneider Electric  
C & D Zodiac Aerospace  
Pratt & Whitney of Canada  
Bombardier Aerospace  
Bell Helicopter  
CAE Electronics  
General Motors  
Spar Aerospace  
General Electric  
Air Canada

Transport Canada  
Bendix-Avelex  
CDI Aerospace  
ComDev  
IMP Aerospace  
Canadian Space Agency  
National Research Council  
Natural Resources Canada  
AirScience Technologies  
Aesus Systems  
Alcan Inc.  
Canada Green Technologies  
Atlantic Aluminum Ltd.  
Medical International Technologies  
HTS Engineering  
Matrox Electronic Systems  
Racan Carrier  
SKF Canada Ltd.  
Torr Canada Ltd.  
IBM Canada Ltd.  
Silgan Plastics Canada Inc.  
Reebok-CCM  
Dassault Systèmes Inc.  
Ivaco Rolling Mills

## The Industrial Engineering Co-op Program

The Co-op Program in Industrial Engineering formally integrates a student's academic studies with work experience in a co-operative industrial organization. The program consists of study and work terms. Students undertake full-time jobs during the work terms in appropriate external organizations, thereby complementing their academic knowledge acquired in the classroom.

For more information about the Industrial Engineering Co-op Program, please visit <http://coop.concordia.ca/programs/engcompstilindustrial.shtml>

## Program Structure

The B.Eng in Industrial Engineering is a 120-credit program which requires four years of full-time study after CEGEP. Courses in this program are a combination of engineering core, industrial engineering core and technical electives:

The "engineering core" (30.5 credits) includes engineering fundamentals such as engineering mathematics, probability and statistics in engineering, engineering management and economics, health and safety and professional practice;

The “industrial engineering core” (78.5 credits) includes the fundamentals of industrial engineering such as production and manufacturing systems, simulation of industrial systems, production engineering, industrial operations research, stochastic models in industrial engineering, quality control and reliability, human factors engineering, facilities design and material handling systems and inventory control.

Technical electives (11 credits) enable students to explore different directions based on their career objectives through courses such as management information systems, decision support systems, fundamentals of electronic business, safety engineering, product design and development, decision models in service sector, advanced concepts in quality improvement and fundamentals of control systems.

### Engineering Core (30.5 credits)

ELEC 275	Principles of Electrical Engineering
ENCS 282	Technical Writing and Communication
ENGR 201	Professional Practice and Responsibility
ENGR 202	Sustainable Development and Environmental Stewardship
ENGR 213	Applied Ordinary Differential Equations
ENGR 233	Applied Advanced Calculus
ENGR 301	Engineering Management Principles and Economics
ENGR 371	Probability and Statistics in Engineering
ENGR 391	Numerical Methods in Engineering
ENGR 392	Impact of Technology on Society

### Industrial Engineering Core (78.5 credits)

ENGR 244	Mechanics of Materials
ENGR 245	Mechanical Analysis
ENGR 251	Thermodynamics I
ENGR 311	Transform Calculus and Partial Differential Equations
INDU 211	Introduction to Production and Manufacturing Systems
INDU 311	Simulation of Industrial Systems
INDU 320	Production Engineering
INDU 321	Lean Manufacturing
INDU 323	Operations Research I
INDU 324	Operations Research II
INDU 330	Engineering Management
INDU 371	Stochastic Models in Industrial Engineering
INDU 372	Quality Control and Reliability
INDU 411	Computer Integrated Manufacturing
INDU 412	Human Factors Engineering
INDU 421	Facilities Design and Material Handling Systems
INDU 423	Inventory Control
INDU 490	Capstone Industrial Engineering Design Project
MECH 211	Mechanical Engineering Drawing
MECH 215	Programming for Mechanical and Industrial Engineers
MECH 221	Materials Science
MECH 311	Manufacturing Processes
MECH 313	Machine Drawing and Design
MECH 370	Modelling, Simulation and Control Systems

### Technical Electives (11 credits)

Consult the Course Calendar

<http://registrar.concordia.ca/calendar/pdf/sec71.40.pdf>

### Contacts

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### Student Academic Services

Tel: 514-848-2424 ext. 3055

### Mechanical and Industrial Engineering Website

[www.mie.concordia.ca](http://www.mie.concordia.ca)

### Hours of Operation

SGW Campus Monday to Friday, 9 a.m. - 5 p.m.

### Civic Address

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